

REMARKS

In the Office Action, claims 1-35 were rejected. By the present Response, claims 1-5, 6, 9, 12, 14-16, 18, 21, 24, 25, 29, 30, and 32 are amended and claims 33 and 34 are canceled. Upon entry of the amendments, claims 1-32 and 35 will remain pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Double Patenting

The Examiner provisionally rejected claims 1-35 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 15, 25, and 37 of copending Application 10/723,716 in view of U.S. Patent No. 5,363,844 (the "Riederer reference"). In addition, the Examiner provisionally rejected claims 1-35 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 5, and 7 of copending Application 10/723,894 in view of the Riederer reference. As neither the copending applications nor the present application have issued, and thus no issued claims are purported to be in conflict, the Applicants do not believe that a response is currently needed. The Applicants maintain the right to respond to the assertion of obviousness-type double patenting between the cited copending applications once one of the copending applications matures into an issued patent.

Claim Objections

The Examiner objected to claims 2, 5, and 15 for various informalities. After review of the Examiner's comments, the Applicants believe the Examiner intended to object to claim 3, not claim 2. Likewise, the Applicants believe that the Examiner's second reference to claim 15 is actually directed to claim 5. In view of these beliefs, the Applicants have amended claims 3, 5, and 15 to address the informalities noted by the Examiner.

In addition, the Examiner objected to claims 9 and 21 for lack of antecedent basis with regard to the recited “one or more suggested gating intervals”. By the present Response, claims 9 and 21 have been amended to remove the term “suggested”. In view of this amendment, the Examiner’s objection to lack of antecedent basis in claims 9 and 21 is believed to be addressed.

Rejections Under 35 U.S.C. § 101

In the Office Action, the Examiner rejected claims 1-12 under 35 U.S.C. §101 as being directed to non-statutory subject matter. Office Action, p. 4. Applicants respectfully traverse this rejection.

Legal Precedent

According to the Supreme Court, Congress intended statutory subject matter to “include anything under the sun that is made by man.” *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09; 206 U.S.P.Q. 193, 197 (1980). Indeed, exclusions of statutory subject matter are limited to laws of nature, natural phenomena and abstract ideas. *See Diamond v. Diehr*, 450 U.S. 175, 185; 209 U.S.P.Q. 1, 7 (1981). Other than these specific exceptions, therefore, nearly anything man made is statutorily patentable subject matter under 35 U.S.C. §101.

In determining when process or method claims include statutory subject matter, the Supreme Court in *Diehr* stated that “[t]ransformation and reduction of an article ‘to a different state or thing’ is the clue to the patentability of a process claim that does not include particular machines.” *See id.* 450 U.S. at 183-185, 209 U.S.P.Q. at 6. In addition to the Supreme Court’s transformation and reduction test, the Federal Circuit has developed a second test which may also be used to determine if a claim recites statutory subject matter, namely does the claim produce a “useful, concrete, and tangible result.” *In re Alappat*, 31 U.S.P.Q.2d 1545, 1557 (Fed. Cir. 1994) (*en banc*). The Federal Circuit further elaborated on this second test by holding that one must look to “the essential

characteristics of the subject matter, in particular, its practical utility.” *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 47 U.S.P.Q.2d 1596, 1602 (Fed. Cir. 1998).

However, explaining this “useful, concrete, and tangible” test, the Federal Circuit has stated “the dispositive inquiry is whether the claim *as a whole* is directed to statutory subject matter.” *In re Alappat*, 31 U.S.P.Q.2d at 1557 (emphasis in original). Indeed, there has been no requirement from Congress, the Supreme Court, or the Federal Circuit mandating that a *specific final result* be shown for a claim to qualify under Section 101. *See id.* Rather, the Federal Circuit has specifically stated “the *Alappat* inquiry simply requires an examination of the contested claims to see if the claimed subject matter *as a whole* is a disembodied mathematical concept representing nothing more than a ‘law of nature’ or an ‘abstract idea,’ or if the mathematical concept has been reduced to *some practical application rendering it ‘useful’*.” *AT&T Corp. v. Excel Communications, Inc.*, 50 U.S.P.Q.2d 1447, 1451 (Fed. Cir. 1999) (emphasis added). Therefore, if a claim meets either the transformation and reduction test put forth by the Supreme Court, or if the claim, read as a whole and in light of the specification, produces any useful, concrete, and tangible result, the claim meets the statutory requirements of Section 101. *See id.*

Analysis

Applicants respectfully assert that the independent claim 1, taken as a whole, recites statutory subject matter under 35 U.S.C. §101 because it produces a useful, concrete and tangible result. The present Application is generally directed to gating the acquisition or selection of image data based upon respiration. *See* Abstract, p. 3, lines 26-31. For example, the present application discloses methods for generating gated image data using gating intervals derived from initiation and termination thresholds. *See* p. 11, line 30 to p. 12, line 5; p. 12, lines 8-14; p. 13, line 30 to p. 14, line 7. The initiation and termination thresholds are derived from motion attributes derived from acquired motion data. *See* Specification, p. 10, line 29 to p. 11, line 19. The result of the processing acts

may be an image of an organ in which motion-related artifacts are substantially reduced.

See Specification, p. 12, lines 12-14.

Accordingly, independent claim 1 recite, *inter alia*, “[a] method gating image data, comprising the steps of... deriving one or more attributes of motion from the set of motion data; deriving an initiation threshold and a termination threshold from the one or more attributes; generating a set of gated image data using one or more gating intervals derived from the initiation threshold and the termination threshold; and displaying or storing an image generated from the set of gated image data.”

Claim 1, therefore, taken as a whole, recites a method for gating image data using initiation and termination thresholds derived from motion attributes whereby a useful image is generated and stored or displayed. Applicants assert that the stored or displayed image is a useful, concrete and tangible result. For example, the image may be used in treating patients, such as for planning therapeutic procedures and so forth, or for diagnosing patients. Accordingly, Applicants respectfully request withdrawal of the rejection of independent claim 1 under 35 U.S.C. §101.

Rejections Under 35 U.S.C. § 102

The Examiner rejected claims 1-8, 10-20, 22-33, and 35 under 35 U.S.C. §102(b) as being anticipated by the Riederer reference. A *prima facie* case of anticipation under 35 U.S.C. §102 requires a showing that each limitation of a claim is found in a single reference, practice or device. *In re Donohue*, 226 U.S.P.Q. 619, 621 (Fed. Cir. 1985). In view of the deficiencies of the Riederer reference noted below, the Applicants respectfully traverse this rejection.

With regard to the Riederer reference, Applicants respectfully note that the Riederer reference appears to be directed to subject matter notably distinct from the subject matter recited in the present independent claims 1, 13, 25, and 35. In particular,

the present independent claims all generally recite deriving initiation and termination thresholds from one or more motion attributes and generating a set of gated image data, as explained in the present Application.

The Riederer reference, however, appears to be concerned with a subtly distinct problem more related to image registration. Riederer, col. 1, lines 60-68; col. 2, lines 28-41, 44-48. In particular, the Riederer reference is generally related to measuring diaphragm position, during imaging and providing visual feedback to the patient to allow the patient to position their diaphragm at the same reference location during each breath-hold. Riederer, Abstract; Fig. 3; col. 2, lines 3-13, 28-33; col. 6, lines 29-56. In other words, Applicants believe that the Riederer reference, when properly considered, is generally directed to acquiring image data in which subsequently acquired images are properly aligned, i.e., registered, with the initial images, rather than with establishing gating intervals. Riederer, col. 1, lines 60-68; col. 2, lines 28-41, 44-48. While the Applicants agree that this distinction may be subtle, the distinct problems being solved by the Riederer reference and the present application result in clear distinctions between the techniques, as are evident in the present independent claims.

For example, independent claims 1, 13, 25, and 35 each generally recite deriving a termination threshold from one or more motion attributes. The Riederer reference, however, does not appear to disclose such a termination threshold derived from one or more attributes of motion. Instead, the Riederer reference only discloses that, once data acquisition is initiated, it continues for a set time period (e.g., up to twenty seconds) before terminating. Riederer, col. 5, lines 41-43; col. 6, lines 62-66. In other words, there is no termination threshold based on motion in the Riederer reference, and termination of data acquisition instead appears to be based upon a set time (which appears to correspond to the length of a breath-hold) elapsing. *Id.* Indeed, it appears to be assumed by the Riederer reference that the patient will merely continue to hold still during a breath hold until image acquisition is complete so there is no reason why the

Riederer reference would disclose a termination threshold. Riederer, col. 6, lines 62-66. While this is only one example of the distinctions between the present independent claims 1, 13, 25, and 35 and the Riederer reference, the Applicants believe that this example exemplifies the distinctions that exist between the present claims and the Riederer reference due to the different problems the respective claims and reference address.

In addition, with respect to independent claim 35, the Applicants respectfully note that this independent claim is written so that the presumption is invoked that the claim is to be interpreted under 35 U.S.C. §112, paragraph 6. As such, the rejection of this claim should be provided in accordance with M.P.E.P. §§ 2181-2183. Currently no such analysis or rejection has been provided. As the present rejection is insufficient to meet the guidance imposed by the M.P.E.P., the Applicants respectfully note that it would be improper to make a succeeding rejection of these claims final as the Applicants have not been afforded an opportunity to respond to a rejection of these claims when properly constructed and analyzed in accordance with 35 U.S.C. § 112, paragraph 6.

The present dependent claims are believed to be allowable due to their dependence from the independent claims discussed above. In addition, however, the Applicants note that the present dependent claims 2-8, 10-12, 14-20, 22-24, and 26-33 are also believed to be allowable for the subject matter they separately recite. For example, dependent claims 6 and 18 generally recite the selection of a set of gated image data from a set of image data. Such subject matter appears to be absent from the Riederer reference. Further, in view of the subject matter described in the Riederer reference, one would not expect such subject matter to be disclosed. In particular, the Riederer reference appears to relate to the acquisition of image data based on diaphragm motion, i.e., differential acquisition. Riederer, col. 5, lines 26-41, 48-50; col. 6, lines 29-66. As recited in claims 6 and 18, however, the set of gated image data is selected from a set of image data, i.e., selection is retrospective. In other words, the recitations of claims 6 and 18 involve selecting a set of gated data from a larger set of image data, i.e., the acquisition isn't

differential, the selection of a subset of gated data from a larger set of image data is. Such subject matter appears to be entirely absent from the Riederer reference.

Likewise, dependent claims 10 and 22 recite the act of determining if one or more scan parameters are satisfied. Such subject matter is discussed in the present application at page 15, line 6 to page 16, line 15. This subject matter also appears to be entirely absent from the Riederer reference.

In view of the various deficiencies of the Riederer reference noted above, no *prima facie* case of anticipation is believed to exist with regard to independent claims 1, 13, 25, and 35. Further, those claims depending from independent claims 1, 13, and 25 are believed to be allowable at least for their dependence from their respective independent claims. Withdrawal of the present rejections and allowance of the present claims is therefore respectfully requested.

Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 9 and 21 under 35 U.S.C. § 103(a) as obvious in view of the Riederer reference. This rejection is respectfully traversed.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a

selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

With regard to claims 9 and 21, the Applicants respectfully note the deficiencies of the Riederer reference noted above with regard to the discussion related to anticipation. In view of these deficiencies, and in view of the dependence of claims 9 and 21 from the allowable subject matter noted above, no *prima facie* case of obviousness is believed to exist with regard to claims 9 and 21. Withdrawal of the present rejection and allowance of claims 9 and 21 is, therefore, respectfully requested.

General Authorization for Extensions of Time

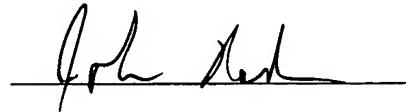
In accordance with 37 C.F.R. § 1.136, Applicants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request therefor. Furthermore, Applicants authorize the Commissioner to charge the appropriate fee for any extension of time to Deposit Account No. 07-0845; Order No. GEMS:0256/YOD/RAR (139943-1).

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: March 5, 2007

A handwritten signature in black ink, appearing to read "John Rariden", is written over a horizontal line.

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